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TABLE OF CONTENTS.

	PAGE.
Editorial	229
Division of Forestry	232
The Nursery Report	235
Division of Entomology	236
The Lemon Tariff, etc.	238
School Gardening in Hawaii (MacCaughey)	240
The Milk Supply of Honolulu (Norgaard).	246
Ducks	253
School Gardens	254
Interesting Things About Coffee.	254

DIVISION OF FORESTRY.

FOREST AND ORNAMENTAL TREE SEED AND SEEDLINGS FOR SALE AT THE GOVERNMENT NURSERY.

The Division of Forestry keeps constantly on hand at the Government Nursery, seed and seedlings of the important native and introduced trees. These are sold at prices just covering the cost of collection or growing.

The list includes both forest and ornamental trees, such as Silk Oak, Koa, various species of Eucalyptus, Golden and Pink Showers, Pride of India, Poinciana, Albizzia, etc. The price of the seed varies from 10 to 50 cents per ounce. The seedlings may be had for 2½ cents each, except a few kinds which are 5 cents. Seed of the various palms is also for sale; the price per 100 varying from \$1.00 to \$2.50. All seed is tested before being sent out, which insures its being good.

All communications in regard to seed or trees should be addressed to David Haughs, Forest Nurseryman, Box 207, Honolulu, Hawaii.

RALPH S. HOSMER,
Superintendent of Forestry.

DIVISION OF ENTOMOLOGY.

To give information about insects free of charge is one of the duties of this Division and Hawaiian readers are hereby invited to make inquiry in person and by mail. In order to be able to advise intelligently or send the right kind of useful insects for relief we like and sometimes it is indispensable for us to see the insect suspected or caught in the act, also specimens of the injury. In a tin with a hole or two, or a wooden box specimens may be mailed at 3rd class rates. When specimens are not accompanied by letter *always* write your name and address in the upper left-hand corner of the package. Address all communications SUPERINTENDENT DIVISION OF ENTOMOLOGY, P. O. BOX 207, HONOLULU, HAWAII.

EDW. M. EHRHORN,
Superintendent.

THE HAWAIIAN FORESTER AGRICULTURIST

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LOOKING TO THE FUTURE.

In the July number an advance notice was given to the bulletin of the Division of Forestry on "Eucalyptus Culture in Hawaii," by Louis Margolin, forest examiner of the U. S. Department of Agriculture. While public opinion may not be prepared to support a proposition of making eucalypts a leading choice for extensive tree planting, either by private or government enterprise, there must be unanimous assent to the general remarks of Mr. Margolin, at the beginning of his treatise, on the "Need of Local Timber Supply." They should be turned to practical account by every landowner in the islands. Every tree of commercial value for which space can be spared will enhance the value of the land upon which it stands long before the time when it shall become mature for market purposes or for utilizing its material upon the farm or ranch where grown. It will increase in intrinsic worth until ready for the axe like a bond on which the coupons are left intact until the day of redemption. As the bulletin will necessarily have a somewhat selected circulation, the remarks to which reference is made are here reproduced:

"The Territory of Hawaii, with its extensive sugar plantations, camps, flumes, tunnels, and irrigation ditches, uses large quantities of timber and lumber. No complete statistics on this subject are available, but the following figures may be considered as quite conservative. There were during the last three or four years used annually in Hawaii over forty million board feet of sawed lumber and timber, 75,000 cords of firewood, 20,000 to 25,000 railroad ties, 25,000,000 shingles and 40,000 to 50,000 fence posts. This annual consumption of wood represents a value to the consumer of at least one and one-half million dollars. With the more intensive development of the plantations, the increase in population, the development of irrigation systems, homesteads, and small farming, and the further extension of roads and power lines, the consumption of lumber will constantly increase. The problem of finding an adequate source of supply of wood becomes, therefore, of paramount importance to the future growth of the country.

"The native Hawaiian forest is entirely inadequate to meet the demand for lumber consumed in the Territory. Although the

Islands have an extremely rich and varied flora, there are few native trees of commercial value. Few native trees average more than 10 to 12 inches in diameter or more than 50 feet in height, and the clear merchantable length of such trees is too small to be of any practical use for lumber. A dozen or more different species of native trees are used locally for various purposes, but the ohia lehua (*Metrosideros polymorpha*) and the koa (*Acacia koa*) are the only two timber trees in the Territory which, because of their size and abundance, have any commercial importance. Of these two species, koa is primarily a cabinet wood, leaving ohia lehua as the only all-around native timber tree; and there is not enough of this tree to affect the situation materially. With few exceptions the chief use of the native forests is to conserve the water supply and regulate the stream flow, and their importance as a source of timber supply, except in a few restricted districts, is entirely negligible.

"The timber supply of the continental United States at the present rate of consumption can not last for a long time. As the supply of timber diminishes, export lumber from the United States may be expected to reach practically prohibitive prices for many uses. The trees native to the continental United States are all of comparatively slow growth. The more valuable pines and hardwoods require not less than 75 to 100 years to form trees big enough for lumber. It takes at least 30 to 35 years to grow tie timber, and even this rate of growth is restricted to only a few species. The rapid-growing Eucalyptus can be grown in the continental United States on only comparatively small areas in central and southern California, Arizona, southern Texas, and southern Florida.

"The Territory of Hawaii can not, therefore, depend indefinitely on the rest of the United States for its supply of lumber. Neither can it depend to any large extent on foreign countries. On the contrary, located as the islands are, and with a climate favorable to rapid growth, Hawaii, in course of time, should be able to export to the United States an ever-increasing supply of hardwood.

"Fuel wood of a low grade can be grown in Hawaii in five or six years, but trees of this age have very little value. Trees suitable for fence posts, railroad ties, and lumber, as well as for the better grades of firewood, require a much longer period to mature. Even the more rapid-growing species of eucalyptus and ironwoods, although growing faster than most hardwoods, require a number of years to reach a size which renders them fit for use as timber trees. The mistake in the past has been that trees were cut which were too young. Systematic tree planting in Hawaii can not, therefore, begin too soon, for the earlier the forests are established the less hardship will be experienced when the supply of timber becomes less abundant.

"In short, an increasing supply of inexpensive lumber is essential to the proper growth and development of the Hawaiian

Islands. The native forests are entirely inadequate both in extent and character to furnish this supply. The continental United States is approaching a time when it will be no longer in a position to export cheap lumber to Hawaii. The Islands can grow their own lumber supply before the timber scarcity comes, provided immediate planting is done on a commercial scale."

What our Washington correspondent says about the lemon tariff ought to furnish an argument in favor of an equitable degree of protection for American coffee. Free coffee is little different from the actual subsidizing of the coffee industry of Brazil, and anyone familiar with the practice of the grocery trade knows that coffee is used like trading stamps to fertilize general business, so that no one probably thinks seriously that a small duty on coffee would materially, if at all, make the breakfast table dearer. Mr. McChesney's article in the July number gave a good insight into the advantage Brazil takes of the defenseless condition of the American coffee producer. Properly encouraged, Hawaii and Porto Rico could supply the country with at least a very large proportion of the best qualities of coffee which the home consumption demands.

That it was really a great work that a majority of the former Board of Supervisors accomplished when they passed the milk ordinance now in force, after having had a previous draft bill successfully vetoed with the aid of legal talent hired by a group of dairymen, following up this victory over ignorance, prejudice and hired forensics by gaining the willing coöperation of the Board of Agriculture and Forestry and voting all the funds requested for the Territorial veterinary services required, is amply demonstrated by the comprehensive report of results made by Dr. Norgaard which is printed in this number. It is gratifying to know that the three public boards mentioned in the report are still coöperating in the cause of pure and wholesome milk as well as the welfare of the dairy industry itself.

In its June number the *Tropical Agriculturist* quotes from the *Indian Trade Journal* a portion of the bulletin on "Peanuts in Hawaii" of the Hawaii Experiment Station.

An article from the *Philippine Agriculturist and Forester* for January on "Activities of the Hawaii Agricultural Experiment Station" is being serially reprinted by the *Tropical Agriculturist* (Ceylon). It says in opening that the government of the Dutch East Indies must be given the honor of having maintained the most advanced activity in tropical agriculture, but a little farther on asserts, "But the most foremost rival of Java today is Hawaii."

An editorial abstract is given by the *Agricultural News* (West Indies) of a Memorandum on the Principles and Methods of Rural Education, issued by the Board of Education of England. It is interesting to note, apropos of Professor MacCaughy's paper in this number, that the publication mentioned lays much importance on the school garden, also on secondary schools such as legislation of this year contemplates establishing in this Territory, where agricultural training will be combined with other education.

As this number goes to press, no appointment of a marketing superintendent has been made. According to the daily press, there is political opposition to Mr. Starrett, the California expert who has gone over the ground and made an illuminating report on the market possibilities, upon the ground that he is not a citizen of Hawaii. If such a principle had obtained here in the past, either with public or private interests, where would the present boasted development of these islands, which is famed the world around, be?

L. Lewton-Brain, formerly micrologist at the experiment station of the Hawaiian Sugar Planters' Association, is now director of agriculture in the Federated Malay States. With his assumption of the office the department has been extended, he having seven assistants where his predecessor had practically the whole work on his shoulders. Mr. Lewton-Brain took the position about the time that F. T. P. Waterhouse visited the Malay States a few months ago to look over the rubber plantations in which the Waterhouse Company, Ltd., is heavily interested.

DIVISION OF FORESTRY.

Honolulu, August 4, 1911.

Board of Commissioners of Agriculture and Forestry, Honolulu, T. H.

Gentlemen:—I have the honor to submit the report of the Division of Forestry for the month of July, 1911.

During the first ten days of the month my own time was given to the preparation of reports to the Board on the sale of awa from forest reserves and an application for a water license in Kau, to correcting the final proofs of the *Eucalyptus* bulletin, and to other routine work.

TRIP TO LANAI.

From July 11 to 15 I visited the island of Lanai to inspect, at the request of the Lanai Company, a forest fence now being built

on that island and to confer with the manager of the Lanai Ranch in regard to other forest matters.

EUCALYPTUS BULLETIN.

On July 24 there was issued as Bulletin No. 1 of the Division of Forestry, Mr. Louis Margolin's "Eucalyptus Culture in Hawaii," an illustrated report of 80 pages, the result of the study of the planted groves of eucalyptus in Hawaii, carried on jointly by this Board and the Forest Service of the U. S. Department of Agriculture during the winter and spring months of 1910. An edition of 3000 copies was printed. The bulletin is being generally distributed to persons throughout the Territory and on our foreign mailing list. This bulletin should prove of no small value to forest planters in Hawaii, as it brings together all the data now available in regard to growing eucalyptus in this Territory.

FEDERAL EXPERIMENTAL PLANTING.

In this connection it is appropriate to note that the Forest Service has continued its allotments of former years for experimental forest planting in Hawaii, by granting the sum of \$700 for the fiscal year ending June 30, 1912. The greater part of this money will be expended in continuing the experimental planting of eucalypts new to Hawaii, started last spring in Nuuanu Valley.

TREE CUTTING ON TANTALUS.

In response to a petition signed by a number of property owners on Tantalus Heights, arrangements were made about the middle of the month with the county road authorities to fell the trees overhanging the road through the eucalyptus forest. I personally marked the trees to be cut. They are now being taken out. As with the trees blown down by the heavy winds of last February, these trees will be cut up into cordwood and sold, the money so received going into the treasury as a government realization. Earlier in the month a few large eucalypts were felled to provide long timbers for the use of the Hawaiian Dredging Company.

FOREST FIRES.

On July 24 a forest fire was reported by Mr. Arthur K. Jones, manager of the Leilehua Ranch, as burning on the land of Helemanu in the Waialua district, Oahu. The local authorities were at once notified and in the evening I went out to Wahiawa, going up early the next morning to the scene of the fire, in company with Mr. W. M. Templeton, the district fire warden, and Mr. George Cruickshank, head luna of the Waialua plantation. The fire had burned over between 125 and 150 acres of grass and

forest land, starting on a flat topped ridge between the Helemanu and Opaaula gulches and burning down a little way into the forested gulches on either side. From the evidence obtainable the fire had apparently been started from a lighted match or cigarette stub thrown thoughtlessly into the dry grass by one of a squad of cavalymen, who were making a reconnoissance survey. The fire started near a camp of a detachment of the Engineer Corps. These men turned out and fought the fire, checking its spread on the ridge. A heavy dew at night fortunately prevented its further advance, the fire stopping just at the edge of the heavy woods in the gulch. A good many young trees on the flat were killed by the fire in the grass. A number of logs were finally extinguished on the 25th by laborers sent up from the Waialua plantation.

Since the 25th three more grass fires have been reported from Wahiawa, all apparently caused by the carelessness of smokers in dropping fire into a bed of dry grass. It is the opinion of the men on the ground that soldiers are to blame for most of these recent fires.

On July 26, smoke from a fire for burning brush at the mountain house of Mrs. Edward Damon caused an alarm to be given that a forest fire had started on the ridge above Moanalua. After considerable telephoning and a trip to Moanalua it was found out that no danger was to be apprehended.

PROSPECTIVE TREE PLANTING.

From a number of sources come reports that arrangements are being made on the part of plantation and ranch interests to do extensive tree planting during the winter months of 1911-12. At the government nursery considerable lots of ironwoods have been started to supply the probable demand later in the year. A little later a good supply of eucalyptus seedlings will also be got ready. But persons or corporations desiring to obtain trees from the government nursery in large numbers would do well to file their applications at once.

Very truly yours,

RALPH S. HOSMER,
Superintendent of Forestry.

THE NURSERY REPORT.

Honolulu, July 31, 1911.

R. S. Hosmer, Esq., Superintendent of Forestry, Honolulu, T. H.

Dear Sir:—The principal work done during the month of July is as follows:

NURSERY.

Distribution of Plants.

	In seed boxes	In boxes transplanted	Pot grown	Total
Gratis	10,000	1,200	288	11,488
Sold	130	130
	<hr/> 10,000	<hr/> 1,200	<hr/> 418	<hr/> 11,618

Collections for July amounted to \$3010.15, \$55.15 of which was on account of plants and seed sold and \$2955 on account of "Preservation, Extension, etc., Forestry and Forest Reserves (see sec. 385, R. L.)," payment for timber cut in Puna, Hawaii, by the Hawaiian Development Company, under logging license January 10, 1910.

COLLECTION OF SEED.

The collecting of *Grevillea robusta*, also species of the Eucalyptus and Casuarina, has constituted the principal work during the month.

EXPERIMENT GARDEN, MAKIKI.

The two men were employed in the following work: Transplanting seedlings, mixing and sterilizing soil, etc.

U. S. EXPERIMENTAL PLANTING IN NUUANU VALLEY.

Since the beginning of the month one man has been employed, his work being planting and hoeing. A portable tool shed and shelter hut was built in sections at the nursery and it has been placed near the middle of the tract to be planted. This hut will serve for a tool shed and also a shelter for the men during heavy rains.

Seven half-acre and two third-acre plots have been planted with the following trees, each plot containing one species:

Half-acre plots—*Eucalyptus corynacalyx* planted, *Eucalyptus microtheca* planted, *Eucalyptus gonicalyx* planted, *Eucalyptus melanophloia* planted, *Eucalyptus Smithii* planted, *Eucalyptus leucoxydon* planted, *Eucalyptus tereticornis* planted; also one plot partly planted with *Eucalyptus pilularis*.

Third-acre plots—*Eucalyptus crebra* planted, *Eucalyptus loxophelba* planted.

The assistance of the men from the nursery and Makiki station was given for six days. This was done for the purpose of paying back labor which the Federal men did in assisting us during the early part of the year.

Very respectfully,

DAVID HAUGHS,
Forest Nurseryman.

DIVISION OF ENTOMOLOGY.

Honolulu, July 31, 1911.

Honorable Board of Commissioners of Agriculture and Forestry,
Honolulu, Hawaii.

Gentlemen:—I herewith respectfully submit my report of the work of the Division of Entomology for the month of July.

During this month we boarded 34 vessels and we found fruit, vegetables and plants on 15 of them.

The usual careful inspection was made of all the shipments with the following results:

<i>Disposal with principal causes.</i>	<i>Lots</i>	<i>Parcels</i>
Passed as free from pests.....	864	14,727
Burned	9	21
Fumigated	5	9
Returned	1	1
Total inspected	879	14,758

RICE SHIPMENTS.

During the month there arrived 29,638 bags of rice, of which 6227 bags arriving on the China on July 7 were found to be infested with the larvae of a moth, probably *Pyralis farinalis*, a very common cosmopolitan pest. On July 15 another shipment of rice arrived on the Manchuria and although the shipment was much cleaner than that on the China we found 2367 bags infested with the same pest. We notified the consignees of the condition of the rice and as we could not return the rice we ordered it all fumigated. It was placed in the tight rooms on the channel dock and subjected to the fumes of carbon-bisulphide for five days and when we examined it we found all the larvae black and partly dried. All the consignees cabled to Japan immediately to prevent further shipments from being made unless they were first fumigated there, and I am pleased to say that the last shipment of rice arrived in clean condition.

PESTS INTERCEPTED.

During this month rice shipments were found infested with several pests, which at this season of the year is to be expected, but as stated elsewhere all infested rice was not passed until thoroughly fumigated, the consignees bearing all expenses.

In a shipment of plants from Japan we found a large nest of ants in all stages which were thoroughly subjected to fumigation.

BENEFICIAL INSECTS.

Eight lots of Japanese beetle fungus were distributed during the month.

I received a cable from Midway Island advising me of the arrival in good condition of the colony of vedalia which was sent last month.

Brother M. Newell, Inspector at Hilo, reports the arrival of six steamers and two sailing vessels of which four steamers brought vegetable matter consisting of 125 lots and 1631 parcels. Seven crates of plums were destroyed on account of a fungus.

INTER-ISLAND INSPECTION.

On July 1 we started two inspectors on inter-island inspection, Mr. A. E. Carter as inspector and Mr. Ed. Drew as assistant. It is very gratifying to be able to report that we have found the people very much interested in our work and most of them avoid taking any fruit along and only occasionally do we find someone who did not know about the new regulation. We have had notices printed in English, Portuguese, Hawaiian and Japanese, and all passengers when purchasing a ticket receive a notice printed in English and Japanese, stating that no fruits, melons, vegetables or roots grown on Oahu can be taken to any of the other islands. Also that no soil or plants with soil can be taken and all such must first be submitted to the Superintendent of Entomology who will attach a tag if they are found free from pests.

Five thousand copies of Rule IX, regarding the inter-island inspection, have been printed and quantities distributed.

The advisory committee appointed by the Board to take up the fight of the Mediterranean fruit fly, of which I am chairman, have been able to coöperate with the existing machinery of the Board of Health and of the garbage department of the city government and everything is now being done to reduce the pest by clean culture methods, and some very encouraging reports have already been received, showing a marked reduction of the pests in certain localities.

Respectfully submitted,

EDW. M. EHRHORN,
Superintendent of Entomology.

THE LEMON TARIFF AND THE SAN DIEGO EXPOSITION.

(The Forester Correspondence.)

Washington, Aug. 12.—The farmer and fruitgrower is likely to feel that he is too often discriminated against by the railroads, by the tariff, by the commission men, by almost everyone with whom he comes into contact. He has so long been pictured as a "rube" who readily buys green goods and gold bricks that he is tempted to think, at times, that even Uncle Sam looks on him in that light. For years the farmers have been asking for the same measure of protection in the tariff that has been accorded freely to the laboring man and the manufacturer. Has he got it? Not always. Occasionally the man who tills the soil has got something but it has been hard won, and no sooner did he get it than powerful forces were arrayed to snatch it away from him.

Take a concrete case. In Florida and California the climate was found to be suitable for growing oranges and lemons. Enterprising pioneers in both states took up the new lines with enthusiasm. They met with many discouragements and setbacks. There were insect pests, frosts, droughts, scarcity and high cost of labor, unknown problems to solve, years to wait for returns, and competition from foreign lands when other problems had all been reduced and success achieved. Orange growing reached a stage where the home growers controlled the market and competition was little feared. Lemon growing continued to be a hard fight although the problem of producing a better lemon than the imported had been solved and 50 per cent. of the home market was supplied by home-grown lemons. The extension of the market was checked because the importers, with cheap home labor and cheap ocean freights, could, and did, keep the American fruit from reaching the seaboard whenever they wished to do so.

Congress wanted to give the American growers an even break, and added one-half cent per pound to the tariff on lemons, or about one and one-half cents a dozen, one-eighth of a cent on each lemon. During the hottest portion of the summer lemons sold in Washington at 10 and 20 cents a dozen. No one found any complaint with this except the Italian importers in New York City. They started in at once to raise a slush fund to fight the tariff. The growers in Sicily and Italy agreed to pay from 5 to 10 cents on each box of lemons imported into the United States to help fight the tariff. They began a campaign to arouse the American public to a belief that it was being wronged, and to influence Congress to remove the tariff on lemons. Congressmen were appealed to by the agents of the importers, the pushcart men and the retail fruit dealers. Untruthful petitions were circulated, so untruthful that their mendacity was evident at a glance. One form of petition refers to the "burdensome duty on lemons,"

alleged to be "for the purpose of doubling the wealth of ten or a dozen millionaires of California, and also for the purpose of paying the wages of tens of thousands of Japanese soldiers who exclusively monopolize the labor of the California lemon orchards, thus depriving American laborers of opportunity of labor and wages."

This is very absurd, as well as false. To patronize the foreign lemon growers and steamship companies would be better, the importers think, than to patronize American railroads, American orchardists and American labor. Japanese are employed to a very small extent in the region where lemons grow. If there were enough white labor they would not be employed at all. Moreover, oranges and lemons are now grown in Arizona, Texas, Florida, Alabama, Mississippi and Georgia.

Such petitions as those just referred to have been circulated at Atlantic coast summer resorts by "barkers," such as those who attract attention to the shows at seaside amusement parks, and many small boys signed them. Posters have also been displayed by these Sicilian agents charging the "high cost of living" on the lemon tariff, which would not cost the average person one cent in a year, if anything at all, for lemons have actually been cheaper this year than they were before the duty was increased, so that the dealers (who are really at the mercy of the importers), are promising a great deal if they promise to reduce the cost of lemons in case the present tariff is repealed.

The fact is that the duty was not a serious burden to the importers until very recently because the execution of the customs regulations permitted them to claim, and to obtain, a rebate for alleged rotten fruit, amounting sometimes to fifty per cent. of the cargo, which they were clever enough to sell afterward as first-class, sound fruit. This has been stopped. A close observer in Washington said recently:

"What the government has lost in customs frauds will never be known, but as Collector Wm. Loeb, Jr., has shown at New York alone, the sum must reach many millions of dollars. Importers have shown the greatest cunning as well as unscrupulousness. They have had to refund millions of dollars to the Treasury Department. Some of the Italian importers were sent to jail. The Italian lemon importers are the latest to have been circumvented, but the government had to revise the regulations for the importation of lemons in order to head them off, and it took eight months to find out how to meet the case. Aided by an almost unlimited 'slush fund' put up by the Sicilian lemon growers, and by very shrewd and resourceful lawyers who are spending money lavishly to buy magazine and newspaper space, the Italian importers are now seeking to have the tariff revised in their interest. This is not the first time foreign interests have tried to shape legislation in Congress, but it is one of the boldest."

The way the Treasury Department stopped the importers from

obtaining too big an allowance for decayed fruit was to make the estimates for rot on the samples displayed for sale. Almost any disinterested person would say that this was fair, but the importers protested wildly and vehemently. The Treasury Department, however, thought mere noise no argument, and the amount of money collected has increased.

The fact is, the tiller of the soil will have to be considered when it comes to fixing up a list of producers who must have a fair share of protection. Legislation by Congress should be for the benefit of the people Congress represents, and not for the benefit of Sicily, Japan, Mexico, Spain, or any other country.

One reason why many men, after retiring from business undertake orange and lemon culture is the romantic interest attaching to it in a land where winter is unknown. But they need some profit to keep them interested in their work. Unless the efforts of the importers to cripple the industry in California shall succeed, the orange and lemon groves of that State will prove to be among the most interesting things the visitors to the 1915 Panama Exposition in San Diego and San Francisco will see.

SCHOOL GARDENING IN HAWAII AS RELATED TO AGRICULTURAL EDUCATION.

VAUGHAN MACCAUGHEY, the College of Hawaii.

(Read at the Convention of the National Education Association, San Francisco, 1911.)

The general nature of school-garden work in Hawaii has been stated in a paper published in the *Southern Workman*, July, 1910, and later reprinted as a bulletin of the College of Hawaii. The present discussion will be confined to the particular relationships, in Hawaii, between school-gardening and agricultural education in general.

In order to understand the educational situation in Hawaii, with reference to school-gardens, one must know the general conditions of life. The population of Hawaii consists, approximately, of 35,000 Hawaiians and part-Hawaiians; 27,000 Latins, chiefly Portuguese; 95,000 Orientals, chiefly Japanese; and 12,000 Teutons, chiefly Americans and English. The natives have been farmers and fisher-folk since the dawn of their history. Indeed, the nature of their island world was such that there were no other means of livelihood. Their food supply came almost wholly from the fertile lowlands that engirdle the islands, and from the bounteous ocean. "The limited area of the islands restricted nomadism; the entire lack of large game cut off hunting; and the absence of grazing domestic animals prevented pastoral life." The Hawaiian was compelled, perforce, to accept a staple, agricultural existence.

The Americans and English have been the exploiters, devel-

opers, promoters, of the agricultural resources of the islands. To their ability is due the phenomenal growth of the sugar industry, which has systematically fostered the importation of large masses of cheap labor, mainly the Orientals and Latins above mentioned. The sugar industry was also the main factor in the annexation of Hawaii by the United States. The immigrants brought in to supply the plantations were naturally drawn from agricultural classes, accustomed to country life and to farm labor. They live very simply, receive small wages and raise large families, as do similar classes the world over.

The indigenous and immigrant population of Hawaii is therefore, by both heredity and necessity, almost entirely agricultural. Living on a relatively low plane of life, they have desired but scant education for their children. With the exception of those in Honolulu and Hilo (the only cities in the Territory), the schools are country schools, usually near sugar plantations. With the exception of a few large ones in the above-named cities, the schools are almost entirely primary schools, covering only the work of the first four grades. Of the 20,245 pupils in the public schools in 1910, 17,369 were in grades one to four, inclusive; 2,486 in grades five to eight, inclusive; and but 254 in high schools. There is but one first-grade public high school in the Territory.

In 1910 the nationalities of the children in the public schools was as follows: Hawaiian and part-Hawaiian, 30%; Orientals, 40%; Latins, 20%; Teutons and others, 10%. Hawaii's great school problem is therefore to furnish primary education to non-English-speaking peoples of the lower classes. It is in the solution of this problem that the schoolgarden, as a part of agricultural education, can play so important a role.

Agricultural education, in the strict sense of the word, has never received adequate attention in Hawaii's schools, no more than it has in other school systems. The reasons are the same here as elsewhere—inappreciation of manual activities, lack of trained teachers, etc. In addition, the necessity for teaching English to non-English-speaking peoples has tended to make the curriculum lean toward drill work in language.

The majority of the white men who first came to the islands were unfamiliar with agricultural processes, especially those connected with tropical agriculture, and for a long time had little interest in it. The sugar industry, and other farming enterprises, are managed by large corporations on the plantation system, employing principally alien labor. In Hawaii there has never developed a permanent community of white farmers working their own land; indeed, social and industrial conditions have been prohibitive to such development. There are no "farmers' children" in the sense in which that phrase is used on the mainland; there is no "country life" equivalent to that of "the states."

The white people have, in general, favored the education of the lower classes along industrial lines, for several reasons: to fur-

nish indigenous skilled labor for the various trades, thus making them independent of the more expensive coast supply; and because of a prevalent attitude that the American public school education was not suited for, in fact might be considered "too good" for, the children of the lower classes.

Principal Edgar Wood, of the Territorial Normal and Training School, is strongly urging the adoption of the following system of industrial education, with which school-garden enterprises will be closely articulated:

"There is at the present time considerable agitation throughout the United States, in fact in most countries where the development depends upon the agricultural resources and the belated industries, toward the establishment of continuation schools of the industrial type. This agitation seems to be in a general way taking hold of Hawaii. Many of our leading citizens have expressed their belief that such schools would be applicable to our conditions, and would prove of great benefit in training boys and girls, who have passed the compulsory school age, into productive workers of the community. It is believed that these schools would tend to greatly reduce the number of boys and girls now in our reformatory schools. * * *

"A plan is proposed which in brief asks for the establishment, on each of the four islands, Kauai, Oahu, Maui and Hawaii, of schools contiguous to important centers of industry. These schools to give instruction in agriculture, home economics, trade and industries. This instruction to be given in field, garden, kitchen and shops, and to be of such a practical nature as to enable the pupils at the end of the course to take up work in connection with the respective industries at remunerative wages.

"The type school for such a system is as follows: A school shall be established in a given locality when twenty-five students can be assured. The attendance of all boys and girls between the ages of 14 and 18, both inclusive, who are not otherwise wisely and profitably employed, shall be required. It shall be incumbent upon all parents, guardians and others having the responsibility and care of children of all ages, to send them to the school established in the locality if they are within four miles, or farther if suitable transportation is provided. Others may attend at the discretion of the Department of Public Instruction, e. g., men who may wish to improve as workers.

"The equipment of the school shall consist of: A farm of not less than 25 acres, to be increased in proportion to the number of boys attending by two and one-half acres per boy, and to be equipped with essential hand-tools. Shops equipped to meet the needs of the industries of the environment. Residence buildings provided with sanitary and culinary equipment for properly housing and feeding the pupils.

"Students shall be remunerated for their work in accordance with current value, to be determined by some schedule such as

time, profit-sharing, or piecework. Students shall work the first two years on the farm or in the shops of the school, and the last two years one-half of each day in the fields or shops of the industry of the locality. The rest of the day will be devoted to the study of related academic subjects—mathematics, geography or industry, reading and writing.

"The Department of Public Instruction will engage and pay all instructors. The industry will supply lands, buildings and equipment, and pay the students working for them in fields, shops, etc. The school shall cultivate the land set apart by the industry and pay the pupils out of the proceeds of the crop." (From Report of Superintendent of Public Instruction, 1910.)

The majority of the country schools are on areas of land sufficiently large to permit the development of school-gardens. Such gardens are encouraged by the Department of Public Instruction, and in many cases the teachers themselves are, by training, proficient gardeners. It is noteworthy that of the total 501 public school teachers, 225 are Hawaiians or part-Hawaiians; 41 Portuguese, and 18 Orientals.

In general the school gardens of Hawaii differ markedly from those of the mainland, in that they are not divided into individual plots, but are common property, the individual pupils not having specific areas. This is doubtless due to several factors—the overcrowded condition of many rural schools, making individual assignments impracticable, and to the fact that many of our most important and interesting crops are long-season plants. Indeed many of the mainland annuals are perennial, or nearly so, here, for example, cabbage, parsley, eggplant, peppers, tomatoes, etc. Moreover, the school-gardens of Hawaii are rural rather than urban, and there is lacking that brisk demand for garden plots that characterizes our city populace.

The School Fund Commission, in its recent report, makes the following statement regarding agricultural work in the public schools: "Nine thousand three hundred and nine pupils engaged in gardening. Practically all children doing some yard work. More than 125 schools actively engaged in agricultural work, two schools planting sugar-cane on commercial basis. Work consists of clearing and preparing land, keeping grounds in order, vegetable-gardening, flower-gardening, tree planting. The plants most commonly raised are taro, potatoes, tomatoes, pineapple, cabbage, carrots, parsley, egg-plant, lettuce, corn, onions, string beans, beets, cucumbers, melons, turnips, sisal, various flowers. The trees and ornamentals most commonly planted are silver oak, monkey-pod, bougainvillea, algaroba, pride of India, pepper-tree, orange, avocado, banana, poinciana, palms of various species, ironwood, eucalyptus, camphor, lemon, lime, mango, papai'a."

Prizes have been effectively used as a stimulus to agricultural work in the public schools. Mr. C. E. Copeland, of Wailuku, Maui, says "that in 1907 the Evening Bulletin offered five prizes

of twenty-five dollars each. Some twenty-five schools entered the contest, the pupils reporting weekly, under the following heads: the work done, condition of soil, name of crop grown, methods of cultivation, watering, weeding, etc.; amount of growth made, extermination of pests, and general remarks. At the close of the season a tabulated statement of work done and results obtained was rendered. The vegetables grown were selected from the following list: lettuce, onions, cabbage, beets, tomatoes, beans, egg-plant, carrots, cucumbers, turnips, melons, sweet potatoes, parsley, Japanese cabbage and peppers. Official committees awarded the prizes at the various exhibits. The competition was very satisfactory to all concerned, and demonstrated that in many, if not all, of our schools, vegetable gardening can be successfully done.

"All of our pupils have abundant opportunity for outdoor work and play all the year round. Practically all have space and means at home to grow flowers and plants. Practically all take advantage of these opportunities. The fondness of the Hawaiians for trees and flowers is well known; the Portuguese are mostly agriculturalists and gardeners, and many of the Japanese are expert horticulturalists. Thus it happens that the most of our pupils are already familiar with the growth of vegetables, flowers and trees. The teacher's chief work in agriculture is to guide the pupil in the application of knowledge already possessed; to encourage their natural fondness for plant life; to develop in them a desire to own and cultivate the land; to form habits of thrift and industry, and to make the school premises models of neatness, order and sympathy upon which they may pattern their own dooryards."

In addition to this gardening work of the elementary grades, agricultural work of a more advanced nature is carried on regularly in the industrial schools. The Lahainaluna School reports systematic classroom studies of soils and fertilizers; the various economic plants, their culture and uses; care of farm animals, and studies in economic entomology. The students supply the commissariat with a variety of vegetables and fruits. In addition to the smaller gardens there are large plantings of sorghum, sisal, pineapples and upland taro.

The Boys' Reform School reports the following plantings since May, 1910: Taro, 13 acres; bananas, 2; sweet potatoes, 8; squash, 3.5; other vegetables, 2; alfalfa, 2; other grasses, 3; sorghum and corn, 1; cotton, 1; sugar cane, 30. The methods employed are those of a modern diversified farm, the boys doing the work under competent instruction.

The farm department of the Hilo Boarding School is well organized, with an agricultural-college graduate at its head. Thirty acres of land are under cultivation. The farm contributes nearly half of the upkeep of the dining hall. The main crops are taro, bananas, pineapples, broom corn, cowpeas, vegetables, fruits and fodder. The Federal Experiment Station has just established a sub-station on land adjoining the school farm, and the work on this station is to be done by the school.

The Territorial Normal and Training School, at Honolulu, gives a large place to nature-study, elementary agriculture and school gardening. A portion of the school's land is laid off into gardens, and here the cadets are given practical instruction in the raising of crops. They are also instructed in the supervision of garden-work, pupils from the grades carrying on work under their direction. The crops are used by the domestic science department in the preparation of the noon lunches, which are sold at cost price to the pupils and teachers. In the kitchen the cadet is thoroughly trained in the best methods of cooking and serving the products of her labor in the garden. The kitchen is on a self-supporting basis. Some typical lunches, illustrating the use of garden-products, are as follows: 1, tomato soup, mince pie; 2, meat stew, papaia sherbet, buttercup cake; 3, vegetable salad, creamy rice pudding; 4, corn chowder, strawberry ice cream, cake.

In the classroom, the cadets are given subject-matter and methods of teaching the important economic plants and animals, and similar subjects comprising elementary agriculture. The plants include such types as banana, cotton, coffee, guava, papaia, rice, sugar-cane, sisal, taro. The industrial phases of crop-production are emphasized, the studies including all of the stages from the selection and preparation of the land to the final transportation and marketing of the crop.

Teachers who are interested in school-garden work can avail themselves of assistance from a number of sources. The College of Hawaii offers two correspondence courses in this field, one in plant life, another in practical horticulture. The Normal School in 1910 issued a "Synopsis of Nature-study Work for the Elementary Schools of Hawaii," of 150 pages. The publications of the Federal Experiment Station contain much practical information. The Department of Public Instruction issues a monthly, "Hawaii's Young People," a portion of which covers nature-study subjects. The Territorial Bureau of Agriculture and Forestry furnishes seedling trees, vegetable seeds and similar material gratis to teachers.

The school-gardens of Hawaii are a part of the forward movement in education. They are supplanting the medieval bookishness of former days. They stand for the beauty and dignity of real things. They are simple. They are within the child's realm. Their pleasant influences reach into his heart through the happy labor of his hands. They typify fundamental institutions.

The school garden has a broad outlook toward life. It is optimistic. It is bound to survive.

THE MILK SUPPLY OF HONOLULU.

Report by the Territorial Veterinarian on the Milk Supply of the City and County of Honolulu with Special Reference to Bovine Tuberculosis among the Dairy Herds of the Territory, addressed to the Territorial Board of Health and the Board of Supervisors of the City and County of Honolulu, by direction of the Territorial Board of Agriculture and Forestry.

Honolulu, July 17, 1911.

Gentlemen:—By direction of the president of the Board of Agriculture and Forestry and especially by the Committee on Animal Industry of this Board, I have the honor to submit herewith a report on the present state of health of the dairy animals of the City and County of Honolulu as bearing upon the local milk supply.

This report is based upon the work carried on by the Division of Animal Industry for the past year or more in an attempt to regulate the local milk supply in accordance with an ordinance passed by the Board of Supervisors of the City and County of Honolulu, under date of March 21, 1910, which ordinance, among other specifications, requires that all dairy animals from which milk is obtained for human consumption must have passed the tuberculin test.

When this ordinance was under consideration it was a well known fact that tuberculosis was prevalent among the cattle in a number of local dairies, for which reason a public meeting was called in order to allow the dairymen to express their opinions as to the advisability of including the tuberculin test among the requirements for a wholesome milk supply, as enumerated in the various, more or less stringent, specifications of the ordinance. The measure was favored by a majority of the dairymen present, and especially by those who had already inaugurated a system of eradication, that is by the up-to-date and progressive milk producers, who realized that, sooner or later, the disease would have to be dealt with as a prohibitive factor, the presence of which was incompatible with a wholesome milk supply.

In order, however, not to make the ordinance oppressive or difficult to comply with for financial reasons, it was decided that the cost of the tuberculin test should be borne by the public, and an understanding was reached whereby the Board of Agriculture and Forestry assumed the actual work of testing the dairy animals belonging to applicants for permits to sell milk.

The first official tuberculin test was begun during the spring of 1910, and the conditions which were immediately disclosed were of such a nature as to cause, to say the least, consternation. The prevalence of the disease among the dairy herds of the Islands had been fully demonstrated when, about a decade ago,

an official test was made, as a result of which a large majority (it was then believed) of the affected animals were destroyed; but that the disease should have spread, either from the surviving affected animals or from imported stock, to the extent which was disclosed by the present test seemed unbelievable, and it was not until a number of owners of reacting animals had been satisfied by post-mortem demonstrations, that the reactors were actually affected with the disease, that it dawned upon the community that it was face to face with at least *one* of the sources of the great mortality from consumption among the population of the Territory. However, it is unnecessary here to recall the appalling percentages of affected animals which confronted a number of dairy owners, and which made it practically impossible to enforce the municipal milk ordinance, without causing a milk famine, while, at the same time, misguided sentiment in regard to the disposal of the carcasses of reacting animals made it next to impossible for the owners of infected herds to rid them of the disease, except at a complete, and often ruinous, sacrifice. Under these circumstances there seemed for a time little prospect of a speedy solution of the milk problem, and the fact that we are now, less than eighteen months from the beginning of this campaign, entering upon an era of *clean milk* for the City and County of Honolulu is due, principally, to two men, to whom I consider it a privilege here to give the credit which so fully belongs to them.

Mr. Isenberg and Mr. Pond, or Mr. Pond and Mr. Isenberg, while employing diametrically opposite methods, have both accomplished what might have seemed the unattainable. Both captains in the dairy industry, each counting his milk producers by the hundred, have cleaned their heavily infected herds from tuberculosis, voluntarily, unsubsidized and at great financial sacrifice, blazing the way for others to follow—a way which no ordinance, statute, rule or regulation could have enforced, and obviating indemnification and litigation *ad infinitum*.

While Mr. Pond has worked for years, keeping at it steadily, familiarizing himself with the various diagnostic agents and methods, eliminating the diseased animals whenever physical symptoms made their appearance, replenishing his herd only with tested animals, and drawing freely on the time and advice of the local officials, he was able when the crucial test came to present for examination a herd which to all intents and purposes was clean, literally as well as technically.

Mr. Isenberg, on the other hand, had always been a breeder, raising his own cows, using imported tuberculin tested sires and, from the appearance of his herd, had no reason to suspect any extensive infection among them. This surmise was also borne out by the tuberculin test. It was, therefore, a great surprise when the official test disclosed the presence of a large number of infected animals. Mr. Isenberg, however, decided at once that no milk from affected animals should be allowed to reach the human consumer and began immediately to destroy all reactors.

Not satisfied with this, and realizing the necessity for some means whereby the milk consumers of Honolulu might be protected from infection, at least during the period which necessarily must elapse before all tuberculous cows could be done away with, he, as president of the Honolulu Dairymen's Association, began at once to make inquiries for the most effective and reliable milk purifying machinery, for which purpose he visited the Department of Agriculture in Washington, D. C. He finally decided on the installation of one of the Goucher Electric Milk Purifying Plants, which may now be seen at work in the association's establishment on Sheridan street. What I most want to emphasize, however, is the fact, that even though this purifying plant, which has been placed under the immediate supervision of the Division of Animal Industry, is known to destroy all disease germs which might be present in the milk, Mr. Isenberg has not alone persisted in disposing of all of his reacting animals, so that he now has an absolutely clean herd, but has, in conjunction with Mr. Pond and the other officers of the Dairymen's Association, issued orders that, from and after July 15th, the Association will receive no milk from dairies having reacting cows on the premises.

This step on the part of the Dairymen's Association, which was only taken after due deliberation, and when it was seen that some dairymen would never get rid of their affected animals so long as they could send their milk through the purifier, practically makes it obligatory for the owners of reacting cattle to either dispose of these animals or else violate the laws of the Territory.

As already stated, however, the examples set by Mr. Isenberg and Mr. Pond have had a salutary effect upon a number of smaller dairies, but it is, nevertheless, a pleasure to state that a large number of independent dairies have disposed of their reacting animals, improved their premises and their methods to conform with the city milk ordinance, and that practically every one of the dairies which was found to be free from the infection when the campaign was first inaugurated have made similar efforts; and that, taken altogether, the milk supply of Honolulu is so vastly improved over what it was 14-16 months ago that it exceeds by far what could reasonably have been expected. As all of this has been accomplished without any harsh methods or onerous regulations it is suggested that the few dairies which still remain delinquent, but which show a disposition to come into line, be granted until the end of the present month to do so, with the understanding, however, that a failure to comply with the very reasonable demands of the municipal as well as the Territorial requirements will be followed by a peremptory revocation of their permit to sell milk.

The appended list of 78 dairies, comprises the milk producing establishments, on the premises of which no tuberculous, or reacting, cattle are found, and where only officially tested and tagged

cattle are being milked. A number of these do not *sell* milk, and as many, both producers and consumers, are under the impression that, so long as no milk is *sold*, it is not necessary to have a permit or to conform with the requirements of the municipal milk ordinance, it may be well here to emphasize that section 1 of the said ordinance makes it obligatory for the milk producer to obtain a milk permit, whether his product is for *sale, use* or *consumption*. As nobody keeps a cow except for the purpose of either selling, using or consuming, or delivering for sale, use or consumption the milk from such cow I cannot see how even the keeper or owner of a single private or "family" cow can avoid taking out a milk permit. When this fact is fully known the number of applicants will undoubtedly be somewhat increased, even though, as stated, a number of the applicants on the appended list do not sell milk.

The requirements of section 2, to the effect that all applicants must furnish a certificate from a veterinary surgeon showing that all cows in his or her possession are free from tuberculosis would seem to be met by the transmission of the appended list in so far as those applicants are concerned whose names appear on the list. All other milk producers, or cattle owners, have either not complied with the requirements or else have had the test performed by veterinarians not connected with this office, and it must be left to the respective officials, whose ordinances or regulations require such certificates of health, to decide whether the same are acceptable or not. It is, however, suggested that such certificates specify whether the animals referred to have ever been tested before, and that, in case they have reacted to such previous test, the question of the health of such animals be referred to the Territorial Veterinarian for decision. The policy of this office is, however, the same as that adopted wherever official tuberculosis control work is undertaken and may be expressed in the one sentence "once a reactor, always a reactor."

As already stated there still remain a few dairies to be brought into line, and the somewhat optimistic view in regard to the present status of the milk supply of Honolulu, as conveyed by this report, is not to be construed into a belief that ideal conditions have been reached or even are near at hand. Far from it. While hygienic and sanitary conditions of dairy premises in general have improved immensely, there is still plenty of room for further improvement, especially in the substituting of old stables and milk rooms with new and more modern ones. The immediate cooling of the milk, to a degree far below that required by the present ordinance, is another very important step toward which we must constantly strive, and which must be everlastingly kept before the producer who delivers his milk direct to the consumer. If another milk depot similar to the one on Sheridan street, and located in Palama or Kalihi, could be established, the regulations might be altered to compel the purifying, cooling and aeration of all the milk consumed in the city proper, but until such a time

the educational work must be continued and the many smaller producers must be kept up to the mark through frequent visits and constant urging with regard to improvements of methods, premises and utensils. That the health and condition of the dairy animals must be kept under continued observation goes without saying, as otherwise it would be but a very short time before many of the now clean herds would have the infection back and further losses impending.

The buying, selling, exchanging, leasing and transferring from one dairy to another of tested or untested, fresh or dry, old or new milch cows, heifers or bulls, must be kept under surveillance. A card index is now kept in this office, by means of which each tested and ear-tagged animal can be located at a moment's notice, and the transfer of tested animals from stable to stable is recorded as soon as known. Another index shows the serial number and the date of testing of each animal in the possession of each owner. It is further intended to have this index embrace sanitary and hygienic conditions of premises and in fact everything pertaining to each individual dairy, not for the purpose of usurping the work or the duties of the milk inspector, but in order to facilitate and systematize the same and avoid unnecessary repetition of work, which the coöperation of the three boards makes it desirable to have collected and recorded in one place.

In this connection I wish to state that the present method of having the milk inspector accompany the inspecting and testing officer of the Division of Animal Industry has proven of unlooked-for value and has greatly facilitated the work of both, not alone so far as transportation is concerned, but principally in combining the authority of the two officers, thereby avoiding repetition of instructions, which if delivered at different times by officers working independently of each other might easily lead to misunderstanding or confusion especially when dealing with Oriental and other owners or laborers of foreign birth. If therefore the present arrangement does not interfere with any other instructions or duties of the milk inspector and if the work as here reported on meets with the approval of the respective boards I am authorized to state that the tuberculosis control work will be continued along the same lines as hitherto. If any further difficulty should be met with in having the remaining tuberculous cattle (reactors) removed from premises where milk is produced or where the infection may be transmitted to other animals, it might be well to publish a "by authority" notice in the daily papers giving a concise definition of what constitutes impure, adulterated, unhealthful or unwholesome milk, with special reference to milk from diseased animals, as defined in the statutes of the Territory and in the municipal milk ordinance now in effect. It is, however, believed that this step will not be necessary and that consequently it would be better not to again alarm the public on this subject.

List of dairies in the City and County of Honolulu entitled to

permits to sell milk, in so far as they have complied with Section 2 of Ordinance No. 17, requiring that all cows in the possession of the applicants are free from tuberculosis:

Name.	Address.	No. of. Cows.	Per- mit No.
P. M. Pond, The Pond Dairy, Monsarrat Rd., Honolulu		107	1
P. M. Pond, Mokuleia, Oahu.		268	2
C. J. Day, 1044 Kalihi Road, Honolulu.		4	3
Kahuku Plantation Co., Kahuku.		25	4
I. Nagaki, Manoa Valley.		10	5
Mrs. Mary Riedell, 1156 Gulick Avenue.		10	6
F. H. Kilbey, Kaimuki.		11	7
Oliver Tavash, Kunawai.		5	9
V. Souza, Kahauiki.		34	12
John Regent, Kalihi.		13	13
Wm. P. Alexander, Jones Street, Manoa.		4	15
Geo. Wond, Holt Lane, Honolulu.		12	16
Dairymen's Association, Sheridan Street.	17
D. P. R. Isenberg, Waialae.		150	18
S. M. Damon, Moanalua.		314	19
Frank Andrade, Manoa.		86	20
Chas. Bellina, Nuuanu.		56	22
George Holt, Kalihi.		55	23
Kaiulani Dairy, Kalihi Valley.		9	24
Antonio Pires		4	27
H. E. Cooper, Manoa.		13	28
Kamehameha Schools		40	29
Sylvano de Nobriga, Nuuanu.		11	30
Sengiro Tsumoto, Pauoa.		10	32
Omai Talsuichi, Pauoa.		7	33
T. F. Farm, Wilder Avenue.		33	36
Pamijuro Miyakawa, Ocean View.		12	37
Mrs. Fred Whitnev, 1366 King Street.		5	38
Frank Medeiros, Metcalf.		11	39
J. L. Robinson, Nuuanu.		3	40
M. Kawamura, School Street.		10	42
L. P. Fernandez, Kalihi.		6	43
J. H. Cummings, College Street.		5	44
J. Morioka, Waimalu.		11	45
J. M. Whitney, Punahou Street.		10	46
Alex. Young, Kalihi.		34	49
Kapahulu Dairy, Kapahulu (Marshall & Aze- vedo)		19	51
T. Nakamura, Puuloa.		7	53
Mrs. C. M. White, 1417 Makiki Street.		8	54
S. Tado, Waikele.		10	56
Richard Kapena, Puunui.		2	58

Manuel August, Puunui.....	1	59
E. K. Ellsworth, Pupukea.....	10	60
S. Buyama, Kalauao.....	4	61
Y. Ogawa, Waialua.....	...	62
T. Fuginaka, Halawa.....	4	63
Waianae Ranch Co., Waianae.....	273	64
R. W. Andrews, Wyllie Street.....	1	65
Mrs. S. J. Grace, Kaimuki.....	4	66
Kitchitaro Inouyi, Moiliili.....	10	69
M. L. Hartman, Kaimuki.....	2	70
D. J. Coonradt, Pupukea.....	3	71
E. C. Smith, Pearl City.....	12	72
Miss Zana Johnson, Pearl City.....	8	73
John Schwanck, Pearl City.....	5	74
Shotero Hirata, Moiliili.....	5	75
G. Takimura, Moiliili.....	3	76
Will E. Miles, Kalihi Road.....	17	78
M. Gomes, Leahi Ranch.....	42	80
K. Yamashita, Moiliili.....	5	82
Francisco Valpo, Lainui Lane.....	4	83
Manuel Abreu, Nuuanu.....	3	84
Frank Gouveia, Kainulani Road.....	13	85
F. V. de Mello, Ewa Mill.....	2	86
Walter E. Wall, Keeaumoku Street.....	9	87
J. Kimoto, Ewa Mill.....	2	88
Chozo Okamoto, Ewa Mill.....	2	89
Oahu R. & L. Co., Kawailoa.....	73	90
Oahu R. & L. Co., Mokuleia.....	470	91
Oahu R. & L. Co., Honouliuli.....	735	92
Oahu R. & L. Co., Kahuku Ranch.....	198	93
John A. Templeton, Wahiawa.....	25	94
I. Kawakami, Pearl City.....	3	95
A. W. Eames, Wahiawa.....	2	96
E. Pankratz, Kapahulu.....	3	97
Chas. R. Frazier, 122 King Street.....	3	98
Stephen J. Alencastre, Moiliili.....	4	99
Rafael Compos, Campbell Avenue.....	10	100

3414

Very respectfully,

VICTOR A. NORGAARD,
Territorial Veterinarian.

REPORT OF COMMITTEE ON ANIMAL INDUSTRY.

The Committee on Animal Industry begs to report that having read the report of the Territorial Veterinarian on the milk supply of the City and County of Honolulu with special reference to

bovine tuberculosis, it is recommended that the same be accepted and that the Territorial Veterinarian be instructed to transmit the same to the Territorial Board of Health and the Board of Supervisors of the City and County of Honolulu for such action as these boards may see fit to take, especially in regard to the continued coöperation with the Board of Agriculture and Forestry for the purpose of eradicating bovine tuberculosis as an essential factor in a wholesome milk supply.

DUCKS.

Very little appears in this journal about turkeys and ducks, a correspondent writes, and we find on referring to back numbers over a period, that this is so. Nevertheless there are a hundred people interested in fowls for one who keeps turkeys and ducks, and for every ten turkeys and ducks one hundred fowls are kept.

What we notice about Muscovy ducks is that their looks belie them—they look big but their weight is small; they are largely feathers, and we think this is greatly due to the bad start they usually get when young owing to the way they are fed. Mostly, ducks take pot luck, share the same food as the fowls, and are obliged to pick up grain like corn, which is an entirely unsuitable food for ducks. The natural diet of ducks, which are aquatic birds frequenting streams, lakes and marshes, finding the bulk of their food in the water, is of a soft nature, and unlike the fowl they have no capacious crop to store food and no large strong gizzard to grind hard food, together with the sharp grit that fowls pick up. Fowls should not be fed sloppy food, but this is exactly how ducks should be fed. You can feed soft food in the morning to fowls but they would not thrive on sloppy food. The distinction between the terms soft and sloppy is as follows—soft food for fowls, is meal mixed with scraps into a thin crumbly paste, but if more water is added until it gets a thin paste it becomes sloppy and suitable for ducks. But ducks can take soft food made for hens, as they will after a few mouthfuls go and drink enough water to clear their bills and wash the stuff down. But hard corn or oats is not a good food for ducks, for them such food is slow and hard to digest. Ducks too, need more animal food than fowls to get quick and good growth. When we see our ducks do not get enough insect food we feed blood meal in their food and a little of that—a tablespoonful to a brood of young ducks—has good effect. Table scraps are excellent.—*Journal of the Jamaica Agricultural Society.*

SCHOOL GARDENS.

The Director of Agriculture of Madras (India) in addressing the students of the Teachers' College at Madras said, in connection with agriculture and education: "In no other profession is the error of confounding the passing of examinations with the acquisition of real knowledge more likely to lead to disappointment. * * * There are two main defects in the mental equipment of the educated classes of this country—the habit of identifying book-learning with knowledge, and the want of observation of, and the general indifference to external nature.

"The real value of school gardens to agriculture will be the influence which they should have on the minds of both teachers and pupils. We all know that education is not the pouring of information into a receptive vessel, but the process of turning the mind to the light. The great obstacle to agricultural progress lies in the light esteem in which the farmers' profession is held.

"If children see that the teacher himself is keenly interested in gardening and is not above working in the garden himself, it will tend to raise their respect for manual labor and for the profession of agriculture usually thought unworthy of the serious attention of an educated man. It will also help them to see that the work of the school has a direct bearing on their after life. The school-master himself will find that the garden brings him into closer touch with his pupils, and it will help him to understand the problems which his pupils will have to face when they leave his school."

INTERESTING THINGS ABOUT COFFEE.

From an exceedingly interesting lecture on "The Cultivation of Coffee," delivered in Glasgow by John H. Bowron, member of a coffee company, the following passages are taken:

Now the State of San Paulo, the source of the world's chief coffee supply, is located in the middle of South America, its entire eastern coast is washed by the waters of the South Atlantic Ocean. It is distant about 15 days' journey from this country, and is one of the wealthiest, fairest, most picturesque, and most delightful sections of the Globe. Contrary to impressions current in Great Britain, San Paulo is a land of culture and civilization, of progressiveness and promise inestimable. San Paulo is a country covering about 112,000 square miles, or a trifle under double the size of England and Wales, and it has a population of about 4,000,000 people.

Well, the Government of this State decided to try and popularize their coffee generally in this country. It was felt that the first thing to do was to guarantee the general public being supplied with the good article in as fresh a state as possible. After mature consideration it was therefore decided, both in the interests

of the coffee drinking public and also that of the State of San Paulo, that some trade mark should be adopted, and in this way the public would be sure to get something reliable. The word "Fazenda"—meaning a plantation—was thought to be the most suitable, and was finally settled on. The coffee was, and is packed in hermetically sealed tins, which, by the bye, is quite a new departure in the coffee trade. The company soon found, however, that there was another enormous difficulty to contend with, namely, the making, and they have during the last few months made a special point in their advertisements of simple methods for making coffee. They have also distributed something like two million cards to hang in the kitchen, giving these simple methods. This form of educational advertisement has proved most effective, and there are daily applications for hundreds of these cards.

ADVICE AS TO MAKING COFFEE.

There is no doubt that care and absolute cleanliness are essential in the making of coffee to get the right result, or the brew is generally most indifferent. First and foremost, the utensil must be clean, and it is not sufficient to simply rinse it out with warm water. It should be scalded as there is a fatty substance in coffee which settles on the inside of the jug and soon becomes rancid. Unless this is thoroughly washed away it is quite sufficient to make the next brew taste stale and unpleasant. Then the pot should be warmed, and the water must be boiling, and if the infusion method is being used the brew must be well stirred or poured to-and-fro from the jug to a cup or another jug before it is allowed to settle.

With tea it is different—all one has to do is to pour the hot water on to the tea, and let it stand a few minutes, when it is ready for use. It is not necessary to take any particular care with the tea pot. All one has to do is to see that no stale tea leaves are left in before making fresh tea. In China the leaves are shaken out of the tea-pot, as it would be considered wrong to even rinse it out, for they say in time (how long I am not quite prepared to say), in this way it becomes unnecessary to put any tea in at all, but just simply to put hot water in the pot. This much I do know from my own personal experience out there—that the family tea-pot forms one of the most cherished heirlooms, and is handed down from generation to generation—unless, of course, it happens to get smashed, in which case they have to start again.

I have no hesitation in saying, however, that, provided one will take this little trouble with coffee, and when you come to think of it, it is so slight that one is not justified in calling it trouble, but rather ordinary care, the result cannot be equalled by any other beverage, either as regards fragrance, delicacy of flavor, or the exhilarating effect it has on the consumer.

Coffee has been used medicinally as a cure or preventive for all manner of diseases. It has been found to be the best stimulant

for administration to persons rescued from starvation, or perishing from intense cold, when spirits given under these conditions often prove fatal. It dispels languor, stupor and lethargy, and, given sufficiently strong, is the finest specific antidote in cases of poisoning.

Fresh roasted coffee has proved to be an effective dispeller of foul gases, as well as a valuable disinfectant, in the sick room, especially when the room or place to be disinfected is near where the coffee is being roasted.

A DESTROYER OF TYPHOID BACILLI.

Some years ago, when Mr. William Field, the largest coffee roaster in Great Britain, whose name I am sure is familiar to most of you in the trade, had a factory down in the East End of London, there was a virulent outbreak of smallpox in the district, but there was not a single case in any of the houses immediately surrounding the factory, although there were numerous cases at each end of the same street, and in all the other streets in the neighborhood. Some six or seven years ago a cargo boat went down in the mouth of the Thames, just by the sewage beds. The cargo consisted of 100,000 bags of San Paulo coffee. After very considerable difficulty the greater bulk of this cargo was salvaged and kiln dried. The Port of London Authorities hearing that it was to be put up for public sale in Mincing Lane applied to a magistrate to stop delivery, as they were of opinion that the coffee must be full of typhoid bacilli, and therefore quite unfit for human consumption. After an enquiry lasting two or three days, the authorities lost the day, as it was conclusively proved that even had the coffee become permeated with typhoid bacilli, the process of roasting would totally destroy the germs; a heat of over 200 centigrade being necessary to roast coffee, and no typhoid germs being able to exist in a temperature of over 150 degrees centigrade.

Further than this, the analyst employed in the case, who, by the bye, had only been consulted on the Saturday, the hearing commencing on Monday, had taken two test tubes of semi-digested food, and to one he added just the same proportion of coffee as would be in the stomach, if one took a cup of coffee after a meal. He then proceeded to fertilize typhoid bacilli with very marked success in the one tube without the coffee, but he was quite unable to do so in the tube with the coffee in it.

I know that during the time that I lived out in Singapore, which as you know is practically on the Equator, it was a very common saying that if one took a cup of coffee immediately on rising it would act as a preventive for malaria or dengue fever, and there were a number of men of my acquaintance, who, during a long period of years spent out in the Tropics, attributed their excellent health to the fact that they had always been temperate and had a cup of coffee every morning on rising.

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PUBLICATIONS FOR DISTRIBUTION.

Any one or all of the publications listed below (except those marked *) will be sent to residents of this Territory, free, upon application to Mailing Clerk, P. O. Box 207, Honolulu.

BOARD.

Report of the Commissioner of Agriculture and Forestry for 1900; 66 pp.
Report of the Commissioner of Agriculture and Forestry for 1902; 88 pp.
* First Report of the Board of Commissioners of Agriculture and Forestry, from
July 1, 1903, to December 31, 1904; 170 pp.
Second Report of the Board of Commissioners of Agriculture and Forestry, for the
year ending December 31, 1905; 240 pp.; 8 plates; 10 text figures.
Third Report of the Board of Commissioners of Agriculture and Forestry, for the
year ending December 31, 1906; 212 pp.; 3 plates; 4 maps; 7 text figures.
Fourth Report of the Board of Commissioners of Agriculture and Forestry, for
the calendar year ending December 31, 1907; 202 pp.; 7 plates.
Fifth Report of the Board of Commissioners of Agriculture and Forestry, for
the calendar year ending December 31, 1908; 218 pp.; 34 plates.
Report of the Board of Commissioners of Agriculture and Forestry, for the biennial
period ending December 31, 1910; 240 pp.; 45 plates.
"Notice to Importers," by H. E. Cooper; 4 pp.; 1903.
"Digest of the Statutes Relating to Importation, Soils, Plants, Fruits, Vegetables,
etc., into the Territory of Hawaii." General Circular No. 1; 6 pp.

PUBLICATIONS FOR DISTRIBUTION—Continued.

- "Important Notice to Ship Owners, Fruit Importers and Others. Rules and Regulations Prohibiting the Introduction of Certain Pests and Animals into the Territory of Hawaii." General Circular No. 2; 3 pp.; 1904.
- "Law and Regulations, Importation and Inspection of Honey Bees and Honey." General Circular No. 3; 7 pp.; 1908.

"The Hawaiian Forester and Agriculturist," a monthly magazine. Vols. I to VII; 1904-1910. To be obtained from the Hawaiian Gazette Co., Honolulu. Price \$1 a year.

DIVISION OF FORESTRY.

- * "Forest and Ornamental Tree Seed for Sale at Government Nursery." Press Bulletin No. 1; 3 pp.; 1905.
- * "Suggestions in Regard to the Arbor Day Tree Planting Contest." Press Bulletin No. 2; 7 pp.; 1905.
- "An Offer of Practical Assistance to Tree Planters." Circular No. 1; 6 pp.; 1905.
- "Revised List of Forest and Ornamental Tree Seed for Sale at the Government Nursery." Press Bulletin No. 3; 4 pp.; 1906.
- * "Instructions for Propagating and Planting Forest Trees." Press Bulletin No. 4; 4 pp.; 1906.
- "Instructions for Planting Forest, Shade and Ornamental Trees." Press Bulletin No. 5; 7 pp.; 1909.
- "Na Ho-kaka no ke Kanu Ana i na Laau Malumalu ame na Laau Hoohiwahiwa." Press Bulletin No. 6; 8 pp.; 1909.
- "Eucalyptus Culture in Hawaii," by Louis Margolin. Bulletin No. 1; 88 pp.; 12 plates; 1911.
- Report of the Division of Forestry, for the year ending December 31, 1905. Reprint from Second Report of the Board; 77 pp.; 5 plates.
- * Report of the Division of Forestry, for the year ending December 31, 1906. Reprint from Third Report of the Board; 123 pp.; 4 maps.
- Report of the Division of Forestry, for the year ending December 31, 1907. Reprint from Fourth Report of the Board; 70 pp.
- Report of the Division of Forestry, for the year ending December 31, 1908. Reprint from Fifth Report of the Board; 85 pp.
- Report of the Division of Forestry, for the biennial period ending December 31, 1910. Reprint from Report of the Board; 86 pp.; 22 plates.

DIVISION ON ENTOMOLOGY.

- "The Leaf-Hopper of the Sugar Cane," by R. C. L. Perkins. Bulletin No. 1; 38 pp.; 1903.
- ** "A Catalogue of the Hemipterous Family Aleyrodidae," by G. W. Kirkaldy, and "Aleyrodidae of Hawaii and Fiji with Descriptions of New Species," by Jacob Kotinsky. Bulletin No. 2; 102 pp.; 1 plate; 1907.
- * "On Some Diseases of Cane Specially Considered in Relation to the Leaf-Hopper Pest and to the Stripping of Cane," by R. C. L. Perkins. Press Bulletin No. 1; 4 pp.; 1904.
- "A Circular of Information," by Jacob Kotinsky. Circular No. 1; 8 pp.; 1905.
- "The Japanese Beetle Fungus," by Jacob Kotinsky and Bro. M. Newell. Circular No. 2; 4 pp., cut; 1905.
- Rule VII: "Concerning the Prevention of Distribution of the Mediterranean Fruit Fly"; unnumbered leaflet; 1910.
- Rule VIII: "Concerning the Importation of all Banana Fruit, Banana Shoots or Plants"; unnumbered leaflet; 1911.
- Report of the Division of Entomology, for the year ending December 31, 1905. Reprint from Second Report of the Board; 68 pp.; 3 plates; 10 text figures.
- Report of the Division of Entomology, for the year ending December 31, 1906. Reprint from Third Report of the Board; 25 pp.; 7 text figures.
- Report of the Division of Entomology, for the year ending December 31, 1907. Reprint from Fourth Report of the Board; 18 pp.; 1 plate.
- Report of the Division of Entomology, for the year ending December 31, 1908. Reprint from Fifth Report of the Board; 26 pp.; 2 plates.
- Report of the Division of Entomology, for the biennial period ending December 31, 1910. Reprint from Report of the Board; 70 pp.; 10 plates.

DIVISION OF ANIMAL INDUSTRY.

- * "Inspection of Imported Live Stock." Rule 1; 1 p.; 1905.
- * "Inspection and Testing of Imported Live Stock for Glanders and Tuberculosis." Rule 2; 1 p.; 1905.
- * "Concerning Glandered Horse Stock in the Territory." Rule 3; 1 p.; 1905.
- * "To Amend Rule 1, Inspection of Imported Live Stock." Rule 4; 1 p.; 1907.
- * "Quarantine of Horse Stock from California." Rule 8; 1 p.; 1908.
- "Rules and Regulations, Inspection and Testing of Live Stock." Rules and Laws; 11 pp.; unnumbered pamphlet; Revised 1910.
- Report of the Division of Animal Industry, for the year ending December 31, 1905. Reprint from Second Report of the Board; 62 pp.
- Report of the Division of Animal Industry, for the year ending December 31, 1906. Reprint from Third Report of the Board; 41 pp.; 3 plates.
- Report of the Division of Animal Industry, for the year ending December 31, 1907. Reprint from the Fourth Report of the Board; 104 pp.; 6 plates.
- Report of the Division of Animal Industry, for the year ending December 31, 1908. Reprint from Fifth Report of the Board; 44 pp.
- Report of the Division of Animal Industry, for the biennial period ending December 31, 1910. Reprint from Report of the Board; 59 pp.; 13 plates.